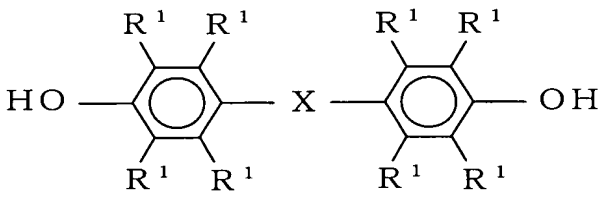
CLAIMS

1. A flame resistant polyester fiber comprising:
a polyester (A) consisting of one or more kinds of copolymerized polyesters having polyalkylene terephthalates and polyalkylene terephthalates as principal components;
a polymer alloy (B) consisting of polyalkylene terephthalates and polyarylates;
a phosphorus based flame resistant agent (C); and
a phosphite based compound (D).

2. The flame resistant polyester fiber according to Claim 1, wherein a weight ratio of the polyester component (A) and the polymer alloy component (B) is (A) / (B) = 90 / 10 to 50 / 50, the phosphorus based flame resistant agent component (C) is in terms of phosphorus atomic weight 0.05 to 10 parts by weight, and the phosphite based compound component (D) is 0.05 to 5 parts by weight, to a total amount of the component (A) and the component (B) 100 parts by weight.

3. The flame resistant polyester fiber according to Claim 1, wherein the polyester component (A) is at least one kind of polymers selected from a group consisting of polyethylene terephthalates, polypropylene terephthalates, and polybutylene terephthalates.

4. The flame resistant polyester fiber according to Claim 1, wherein the polymer alloy component (B) is an polymer alloy consisting of:
at least one kind of polyalkylene terephthalates selected from a group consisting of polyethylene terephthalates, polypropylene terephthalates, and polybutylene terephthalates; and a polyarylate obtained from a mixture of terephthalic acid and/or terephthalic acid derivatives and isophthalic acid and/or isophthalic acid derivatives, and bisphenol compounds represented with a general formula (1):



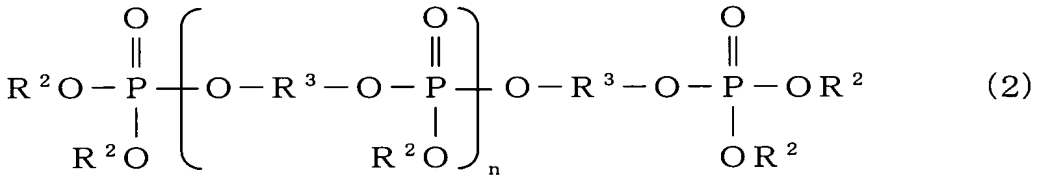
(1)

(where, R^1 is hydrogen atom, or hydrocarbon group with 1 to 10 carbon atoms, and may be identical or different respectively, X represents methylene group, ethylidene group, isopropylidene group, carbonyl group, sulfonyl group, 1,3-phenylene diisopropylidene group or

1,4-phenylene diisopropylidene group.)

5. The flame resistant polyester fiber according to Claim 1, wherein the phosphorus based flame resistant agent component (C) is at least one kind of compounds selected from a group consisting of:
phosphate based compounds, phosphonate based compounds, phosphinate based compounds, phosphine oxide based compounds, phosphonite based compound, phosphinite based compounds, phosphine based compounds, and condensed phosphoric acid ester compounds.

6. The flame resistant polyester fiber of claim according to Claim 5, wherein the phosphorus based flame resistant agent component (C) is a condensed phosphoric acid ester compound represented with a general formula (2):

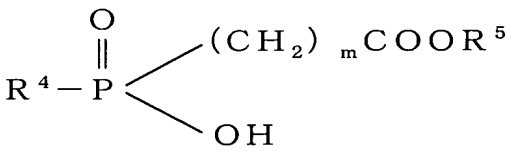


(2)

(where, R^2 is monovalent aromatic hydrocarbon group or aliphatic hydrocarbon group, which may be identical of different respectively, R↑3 is a divalent aromatic hydrocarbon group, and when two or more are included they may be identical or different respectively, n represents an integer of 0 to 15.)

7. The flame resistant polyester fiber according to Claim 1, wherein the component (C) is a reactive phosphorus based flame resistant agent being copolymerizable with the component (A).

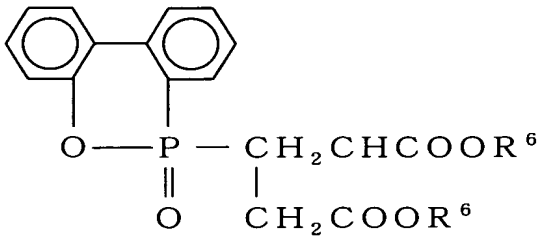
8. The flame resistant polyester fiber according to Claim 7, wherein the reactive phosphorus based flame resistant agent is at least one kind selected from a group consisting of phosphorated compounds represented with general formulas (3) to (8):



(3)

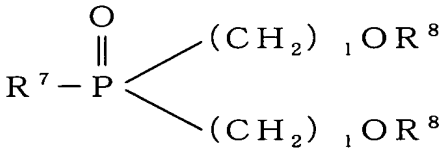
(where, R^4 is aliphatic hydrocarbon group with 1 to 20 carbon atoms

or aromatic hydrocarbon group with 6 to 12 carbon atoms, R^5 is hydrogen atom or aliphatic hydrocarbon group with 1 to 20 carbon atoms, m represents an integer of 1 to 11);



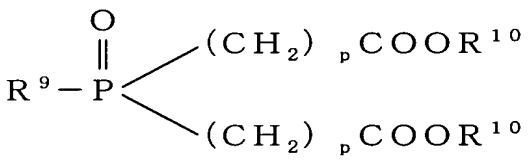
(4)

(where, R^6 is hydrogen atom or aliphatic hydrocarbon group with 1 to 20 carbon atoms, and they may be identical or different respectively);



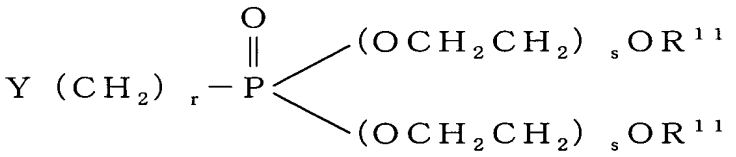
(5)

(where, R^7 is aliphatic hydrocarbon group with 1 to 20 carbon atoms or aromatic hydrocarbon group with 1 to 12 carbon atoms, R^8 is hydrogen atom or aliphatic hydrocarbon group with 1 to 20 carbon atoms, and they may be identical or different respectively, and l represents an integer of 1 to 12);



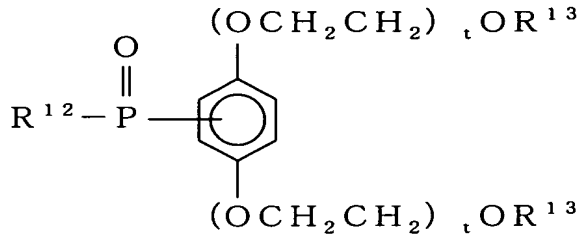
(6)

(where, R^9 is an aliphatic hydrocarbon group with 1 to 20 carbon atoms or aromatic hydrocarbon group with 6 to 12 carbon atoms, R^{10} is hydrogen atom or aliphatic hydrocarbon group with 1 to 20 carbon atoms, they may be identical or different respectively, and p represents an integer of 1 to 11);



(7)

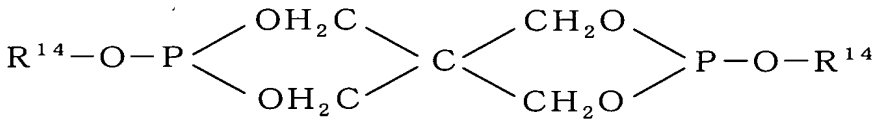
(where, R^{11} is hydrogen atom or aliphatic hydrocarbon group with 1 to 20 carbon atoms, and they may be identical or different respectively, and Y is hydrogen atom, methyl group, or aromatic hydrocarbon group with 6 to 12 carbon atoms, and r and s represent integers of 1 to 20, respectively); and



(8)

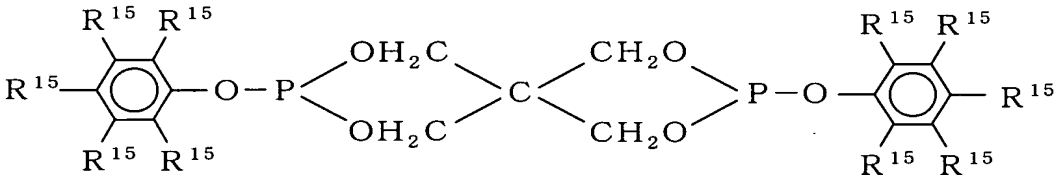
(where, R^{12} is aliphatic hydrocarbon group with 1 to 20 carbon atoms or aromatic hydrocarbon group with 6 to 12 carbon atoms, R^{13} is hydrogen atom or aliphatic hydrocarbon group with 1 to 20 carbon atoms, and they may be identical or different respectively, and t represents an integer of 1 to 20.)

9. The flame resistant polyester fiber according to Claim 7, wherein the phosphite based compound component (D) is at least one kind selected from a group consisting of trialkyl phosphites, tri aryl phosphites, alkyl aryl phosphites, and phosphite based compounds represented with general formulas (9) to (12):



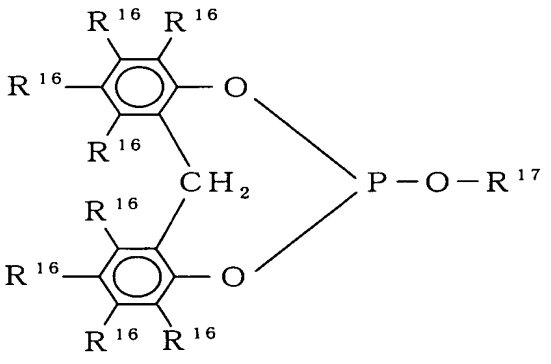
(9)

(where, R^{14} is linear or branched hydrocarbon group with 4 to 20 carbon atoms, and they may be identical or different respectively);



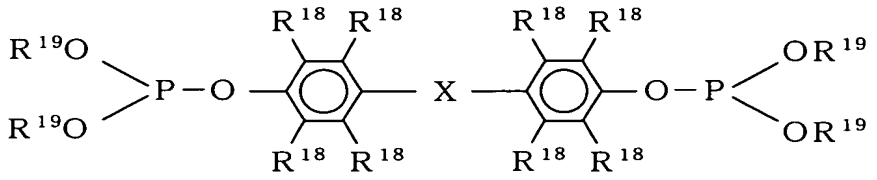
(10)

(where, R^{15} is hydrogen atom or hydrocarbon group with 1 to 10 carbon atoms, and they may be identical or different respectively);



(11)

(where, R^{16} is hydrogen atom or hydrocarbon group with 1 to 10 carbon atoms, and they may be identical or different respectively, and R^{17} is hydrocarbon group with 4 to 20 carbon atoms or aromatic hydrocarbon group with 6 to 20 carbon atoms); and



(12)

(where, R^{18} is hydrogen atom or hydrocarbon group with 1 to 10 carbon atoms, and they may be identical or different respectively, and R^{19} is hydrocarbon group with 4 to 20 carbon atoms or aromatic hydrocarbon group with 6 to 20 carbon atoms and they may be identical or different respectively, and X represents methylene group, ethylidene group, isopropylidene group, carbonyl group, sulfonyl group, 1,3-phenylene diisopropylidene group or 1,4-phenylene diisopropylidene group.)

10. The flame resistant polyester fiber according to Claim 1, wherein organic fine particles (E) and/or inorganic fine particles (F) are further mixed therein.

11. The flame resistant polyester fiber according to Claim 10, wherein the organic fine particle component (E) is at least one kind selected from a group consisting of polyarylates, polyamides, fluororesins, silicone resins, cross-linked acrylate resins, and cross-linked polystyrenes.

12. The flame resistant polyester fiber according to Claim 10, wherein the inorganic fine particles component (F) is at least one kind selected from a group consisting of calcium carbonate, silicon oxide, titanium oxides, aluminum oxide, zinc oxide, talc, kaolin, montmorillonite, bentonite, and mica.

13. The flame resistant polyester fiber according to Claim 1, wherein the flame resistant polyester fiber has non-crimped flat yarn shape.

14. The flame resistant polyester fiber according to Claim 1, wherein the flame resistant polyester fiber is spun dyed.

15. The flame resistant polyester fiber according to Claim 1,

wherein the flame resistant polyester fiber is yarn for artificial hair.

16. An artificial hair consisting of a flame resistant polyester fiber.